

# CATASTROPHIC MORTALITY DISPOSAL

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NEBRASKA DEPARTMENT OF AGRICULTURE  
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LIVESTOCK DISEASE EMERGENCY



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## **1.0 SCOPE AND APPLICATION**

In the event of a contagious animal disease (CAD) outbreak or other natural or man-made disaster, Nebraska livestock and poultry producers could be faced with the task of large-scale mortality disposal. It is likely that counties providing emergency response in these events would be called on to support livestock and poultry producers who, for whatever reason, are not prepared to dispose of animals on their property. Currently, the Nebraska Department of Environmental Quality (NDEQ) recommends that any livestock or poultry operation at or above 300 animal units in size prepare a catastrophic mortality disposal plan. NDEQ recommends that this plan addresses on-site disposal. At this time, no regulatory means exist to force producers to develop these plans. Because of this issue, and the potential need to dispose of vast numbers of animals, the Nebraska Department of Agriculture (NDA) and NDEQ have requested that local emergency managers identify acceptable methods of mortality disposal for their counties and several sites that could be used for mortality disposal. Even if producers have plans for on-site disposal, it may be necessary for the county to support or supplement this disposal, during an emergency following the plans and considerations outlined in this monograph and other documents provided by NDA and NDEQ.

The purpose of this monograph is to provide functional guidance about providing and assisting in catastrophic mortality disposal associated with a CAD outbreak; however, the plans and considerations are applicable to any catastrophic mortality event. Local emergency management should use this monograph as a template or reference to develop an operational plan for providing and assisting in catastrophic mortality disposal. Operation plans should be consistent with the Local Emergency Operations Plan (LEOP). Several sections of this monograph contain general descriptions of the scope of operations necessary to implement a particular component of catastrophic mortality disposal. In most cases, these sections were made general so local emergency planners could insert or reference more detailed, county-specific, operational details. Examples of these sections include Health and Safety, Communication, Public Information, and Mental Health Services.



In the sections dealing with the selection of mortality disposal methods and disposal locations, counties should consider the guidance given, and then go through the two selection processes adding this county-specific information to the template. The counties should work with NDA and NDEQ to determine appropriate and practical disposal site locations and disposal methods, per NDEQ's publication entitled *Catastrophic Animal Mortality Management Plan – Emergency Disposal of Animal Carcasses* (NDEQ 2004). In the case of identifying specific locations, the counties should include specific contact information for the owners of each selected site.

## **2.0 SUMMARY OF PROCEDURES**

This monograph presents the operational considerations and details associated with a county's response to a catastrophic livestock or poultry mortality event. The operational considerations include identifying methods of disposal and county-managed locations for disposal; and suggested critical personnel and equipment for response, decontamination and disinfection, providing health and safety, and also methods of communication, documentation, providing public information, and providing mental health support.

### **2.1 Identifying Methods for Mortality Disposal**

NDEQ, in cooperation with NDA, has developed a *Catastrophic Animal Mortality Management Plan* (NDEQ, 2004). NDA and NDEQ strongly encourage county emergency planners to review this document as they select the most appropriate disposal options for their county. It is likely that multiple methods will be required for any given county. This plan discusses five primary means of emergency carcass disposal: landfiling, rendering, air curtain incineration, composting, and burial. The plan presents descriptions of each method and cites advantages, concerns, and other considerations associated with each method. Burial is identified as the preferred method in Nebraska. In addition, this plan presents the possibility of modifying any one of the five options or developing a unique, effective alternative. NDEQ's *Catastrophic Animal Mortality Management Plan* contains "Disposal Option Consideration Checklists" found



in its Appendices. An extensive review of carcass disposal can be found in *USDA, APHIS, Veterinary Services, National Animal Health Emergency Management Guidelines CD* (August 2004), which is available in its updated version at the following web site:  
<https://qp01.aphis.usda.gov/nahems>.

As disposal options are considered, emergency planners should consider the total scope of an emergency response to a catastrophic livestock or poultry mortality event. For example, the selection of incineration as a disposal option could severely impact county resources relative to other response areas, such as traffic control or decontamination and disinfection, being delegated to local firefighters who also would be assigned to the incineration effort. Using these resources to implement and oversee carcass incineration may redirect limited county resources from other critical response activities, and divert them from their primary role of protecting the community from fire.

NDEQ and NDA are prepared to work with local emergency planners to review and recommend potential catastrophic animal mortality disposal methods. County Emergency Managers are encouraged to work with these agencies to develop their catastrophic animal mortality plans, including pre-approved methods for disposal mortalities.

## **2.2 Identifying Locations for Mortality Disposal**

Once the method(s) for disposal are determined, counties should identify locations where the disposal will occur. Often the selection of disposal methods and locations will occur concurrently. In some cases, due to limited possibilities for locating disposal sites, a county may identify these areas before identifying the disposal method(s). In these cases, the disposal method would be tailored to the possible disposal sites.

At sites where on-site disposal is not possible or not practical, mortality disposal for the euthanized animals will be carried out at another site. This will require the movement of



carcasses off-site for disposal. Cases that could necessitate off-site disposal include, but are not limited to: disposal of animals involved in laboratory research, conditions where there is not adequate land area, sites with shallow water tables, and sites in close proximity to large human populations. If locations requiring emergency mortality disposal are adjacent to each other, consideration should be given to a shared or common disposal area.

The following list presents considerations for an emergency mortality disposal site:

- Number and type of animals that could be disposed of at the site.
- Potential disposal areas should be located near concentration of livestock, increasing the likelihood that the areas will be within the borders of a quarantine area, in the event of a CAD outbreak.
- Private and public lands should be considered.
- Isolation from public areas is desirable.
- Areas should allow protection from scavenging animals.
- These areas should not be located in sensitive environments (wetlands).
- If incineration is selected, sites should be isolated from public view.
- If burial is selected, potential groundwater impact must be considered.
- Proximity of forests, fuel storage, or other potential threats, in the case that incineration is considered.
- Average weather conditions, including prevailing wind direction, especially in the event that incineration is considered.
- Availability of fuel sources if incineration is considered.
- Availability of carbon sources if composting is considered.
- Soil type and hydrologic characteristics.
- Availability of utilities, such as electric (overhead lines), water, sewer, telephone, etc.
- Occurrence and location of buried or overhead utilities.
- If access control is difficult, it may be desirable to post guards at some disposal areas.
- Subsequent use of the disposal area.

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## **2.3 Mortality Disposal**

The following information identifies the personnel, equipment and other supporting services that may be necessary to properly dispose of animal mortalities in an emergency situation.

### **2.3.1 Personnel**

Two types of personnel are needed to implement a mortality disposal action. Specially trained workers will be needed to operate the heavy machinery and general laborers will be needed to support the heavy machinery operators. Some members of a mortality disposal crew will require training in equipment and personal decontamination and disinfection.

Possible organizations that could be used for support include: private contractors (heavy machinery operators), fire department, county roads, public works department, Nebraska Department of Roads, the Nebraska National Guard Nebraska, and Game and Parks Commission. Counties can also access citizen corps or other volunteer organizations, as appropriate. If these groups are utilized, the county attorney should evaluate the volunteers' liability relative to assisting the county in the response to a livestock or poultry emergency. Every effort should be made to limit or remove associated liabilities for volunteers.

Personnel will be assigned to mortality disposal sites for shifts with lengths determined by the Planning and Operations Sections. In most cases, these workers will need to be provided food, water, and sanitary facilities.

### **2.3.2 Equipment**

The following list of equipment could be used for mortality disposal:

- Heavy machinery:
  - Excavators and backhoes



- Bulldozers
  - Front-end loaders
  - Forklifts
  - Tractors/trailers
  - Dump trucks
  - Fire truck (incineration)
  - Roll-offs
  - Cranes
  - Chains, hooks, shovels and cargo nets
- **Lighting:** Lighting should be established to mark the no-access point and provide general area illumination for staff working at the no-access point. Flashers attached to barriers or signs can be used to alert approaching travelers of the impending traffic-control point. With any lighting system, it will be necessary to provide electricity, either with batteries, generators, or drop service from power lines. The use of a drop service will require coordination with the local power company.
  - **Communications:** Each mortality disposal team leader should be provided a means of communication with the emergency operation center (EOC). Generally, this will consist of portable radios tied into the EOC's frequency. Selection of radios should consider local topographic and cultural interferences that could negatively impact transmission and reception. If line-of-sight or distance becomes a limiting factor, the use of portable antennas or repeater towers may be necessary. In some cases, pagers, cellular phones, citizen band radios, or other devices will be appropriate. Whichever system is chosen, it must be compatible with other systems used in the Unified Command (UC), and it must have the bandwidth or capacity to function effectively during an emergency.
  - **Biosecurity:** Portable showers, sprayers, boot washes, and other associated biosecurity aids should be provided to each mortality disposal team. Since they will be working in the most contaminated environments, they should implement some level of decontamination and disinfection of personnel and equipment even between disposal sites, but especially when leaving one site and exiting the quarantine area. (See Monograph No. 004 *Decontamination and Disinfection*.)

If carcasses need to be moved off-site, they should be transported in leak-proof containers that are covered. This is necessary to contain any virus or bacteria containing material or fluid from exiting the transport container during movement. The leak-proof character of a container can be enhanced by placing several inches of sorbant (sawdust, kitty litter, sand, etc.) over the bottom of the container and then lining the container with plastic sheeting. As the container is loaded, sufficient space should be left in the container to allow carcass expansion, especially in warmer





temperatures. Every effort should be made to avoid puncturing the body cavity of carcasses as they are handled and loaded into the container. This will minimize the release of body fluids.

Personnel transporting the carcasses should have sufficient disinfectant to clean up small spills of contaminated material that may be released during transport. Carcass transport vehicles should be decontaminated and disinfected before they leave the infected premises and after unloading the carcasses. These topics are addressed in detail in Monograph No. 004 *Decontamination and Disinfection*.

## **2.4 Health and Safety**

General first aid and access to emergency medical services must be provided during all activities associated with catastrophic mortality disposal. This portion of a response would be coordinated by the Safety Officer, a member of the Command Staff supporting the UC.

Personnel working with catastrophic mortality disposal should be provided personal protective equipment (PPE) to minimize their exposure to contaminated materials. All workers at a catastrophic mortality disposal site should wear disposable PPE. Unless stipulated by the lead responding veterinarian (possibly a position added to the Command Staff), respiratory protection is probably not necessary. Catastrophic mortality disposal workers should wear waterproof clothing (disposable is preferred, i.e., Tyvek® or Saranex®) or rain suits, with hoods, that can be disinfected and reused. Rubber gloves and rubber boots will also be needed. These items can be disinfected and reused. Under gloves, cotton or nitrile, should be worn under the outer rubber glove. Personnel also should wear hardhats fitted with face shields to protect their faces. In addition, dust masks can also be worn to protect the workers' mouths and to prevent ingesting splashed materials.



## **2.5 Communication**

Because of the dynamic nature of an emergency response to a catastrophic mortality event, the catastrophic mortality disposal plan must be implemented in an effective manner relative to the ever-changing understanding of the nature and extent of the disease in question. In order to allow the mortality disposal teams to quickly respond to changing field conditions, communication between the teams and EOC must be maintained. Real-time communication and pre-shift meetings constitute the required communication needed to support catastrophic mortality disposal associated with a CAD outbreak or other natural disaster resulting in large-scale livestock or poultry loss.

## **2.6 Documentation**

Throughout the process of catastrophic mortality disposal, it will be necessary to provide various types of documentation. For indemnity payments or other forms of state or federal reimbursement or cost sharing, it will be necessary to document the resources applied and expended in providing catastrophic mortality disposal. These costs can include the number of animals and pounds of livestock disposed of, labor charges, equipment rentals or purchase, costs of expendable equipment or supplies, subcontractor costs, or any other costs associated with providing the mortality disposal services. The collection and evaluation of this information will be the responsibility of the Finance and Administration Section.

Due to the nature of an emergency response, it is critical to identify personnel who will be responsible for documenting these issues or monitoring and verifying that the needed documentation is being collected by other parties. In some cases, identifying a specific response job that includes documentation will be preferable, especially if personnel will be rotated through shifts and response jobs. This role and responsibility should be identified and described in a county's LEOP.



Possible actions or items that should be included in a documentation checklist include:

Responder time (hours)	Number of pounds of livestock or poultry disposed of at a location
Number of responders	Meals provided
Identity of responders	Location of each responder
Mileage to the disposal area	Equipment at each point
Sanitation services provided	Usage time for equipment
Coordinates of disposal areas	Specific quantities of expendables used
Method of disposal	
Animal Identity	
Animal Ownership Identity	

Documentation also will be essential to tracking vehicles, heavy equipment, and people who exit and enter the disposal area.

Documentation should be maintained in written form. Video, photographs, and tape-recorded messages can be used to supplement the written documentation. Written documentation can be maintained in a logbook format, using documentation worksheets, or a combination of both. Documentation should be recorded with an ink pen, and any entry errors should have a single line drawn through them with the author's initials and date recorded at one end of the line. If a logbook is used, it should have numbered pages, and the spine should be sewn, making the removal of pages both difficult and obvious. Pages should never be removed from a logbook. Anyone making entries in the logbook should sign and date the bottom of each page. If documentation worksheets are used, the author should sign and date the bottom of each worksheet. Sets of logbooks and worksheets should be assigned to each response task (e.g., traffic control, decontamination/disinfection, mortality disposal, etc.) or a master set of logbooks and sheets can be maintained. Logbooks and worksheets should be assigned unique identification numbers. When the logbooks or a group of worksheets is issued from Planning (response related) or Finance/Administration (cost and time reporting related) to a responder, the identification numbers of the logbooks and worksheets should be recorded, and the recipient should sign them out in a document tracking log maintained by the issuing Section. This establishes a chain-of-custody for the documentation.



If pictures, video, or taped messages or interviews are used to supplement the documentation record, the following information should be documented for each picture, video segment or audio-taped message or interview:

- Photographer or interviewer
- Subject
- Time
- Date
- Person interviewed (video or audio taped)
- Photo and film roll number
- Direction (pictures and video)
- General weather conditions (e.g., temperature, wind direction, humidity, sky condition, etc.)

## **2.7 Training**

Personnel training will be a critical component of planning to initiate a catastrophic mortality disposal plan associated with a CAD outbreak or other natural livestock or poultry disaster. Besides the equipment-specific training required for the heavy equipment operators, all personnel associated with the mortality disposal will require training in: foreign animal disease (FAD), biosecurity, the operation and maintenance of decontamination and disinfection equipment, decontamination and disinfection procedures, associated environmental protection issues, and documentation requirements. Training in FAD and biosecurity can be provided at a local level by private, state, or federal veterinarians. Training relative to decontamination and disinfection can be provided by local fire or emergency medical services personnel. In some counties, military Reserve or National Guard units, as well as, local health departments can assist in providing decontamination and disinfection training.



## **2.8 Public Information**

Once the quarantine is issued, the Public Information Officer (PIO) attached to the Command Staff will initiate the county's public information and media plan to inform the local community of the mortality disposal associated with the livestock or poultry emergency response. This notification may involve public announcements via radio, television, web site, newspaper, and signage announcing that catastrophic animal mortality is occurring, where it is occurring, and why it is necessary. Any information release should be coordinated with state or federal PIOs attached to Area Commands. Local responders should identify and make use of any state or federal pre-prepared information or press releases that could be used in responding to a catastrophic livestock or poultry event.

In general, response workers should be trained to refer any press or other project-specific inquiries to the public relations offices designated for the response.

## **2.9 Mental Health Services**

A response dealing with an outbreak of a CAD can result in the widespread euthanasia of livestock and poultry over a large area. Natural disasters, such as floods or tornadoes, also can result in large scale poultry or livestock losses. The major differences between the local impacts of a CAD vs. a natural disaster are: (1) recovery from a CAD will be protracted, possibly over months; (2) a CAD will generally impact a much greater area; and (3) a CAD is likely to require the widespread euthanasia of entire herds or flocks.

The outbreak of a CAD or other livestock- or poultry-related disaster will generally disrupt family and community routines. In many cases, this will result in a subsequent disruption of family and community dynamics. For example, the mass mortality of herds or flocks could deprive producers of a means to generate income, and it may be perceived as a total loss of their livelihood. The response to a CAD can also have a negative impact on the community infrastructure (e.g., quarantines). In addition, the local community will be interacting with an



influx of strangers and the associated bureaucracies of any state or federal programs or agencies responding to the disaster. These factors can combine to create stressors for responders and the impacted community.

The stress associated with a CAD outbreak, or livestock or poultry natural disaster can result in physical, mental, and behavioral reactions of the responders and the community members. In the United Kingdom, during the 2001 Foot-and-Mouth Disease (FMD) outbreak, some cases where producers considered and, in some cases, committed suicide was an unanticipated result of the stress. Similarly, personnel involved in mass euthanasia of infected animals can often become depressed.

Generally, anyone associated with a CAD outbreak or livestock or poultry natural disaster will be affected by it. The degree of impact will vary greatly. While, in many cases, the stress will decrease over time, counties should be prepared to offer crisis intervention and counseling, and other forms of support to the community and responders, throughout the entire response. In some cases, longer-term assistance will be required.

Providing this type of community and individual response will require specially trained personnel. Local mental health professionals (public and private), hospitals, and state and federal mental health agencies, all provide these personnel. In addition, law enforcement agencies and some volunteer organizations assisting in disasters (VOADs) have personnel trained to provide this support. Examples of VOADs that could assist in providing the mental health component of a CAD or natural livestock or poultry response could include the following: local religious leaders and crisis counselors from VOADs, such as the American Red Cross.

The scope and duration of these services will be tailored to each event. However, it will be critical to incorporate the announcement of these services with the public relations plan and information disseminated to the community. Letting the impacted citizens know what services are available and how to access them will be imperative for any mental health assistance program to succeed.



It is likely that most counties have a mental health response plan already developed and attached to their LEOP. For these counties, it will not be necessary to go through the planning process again; rather, the existing plan needs to be incorporated into any agricultural appendix to their LEOP.



## REFERENCES

NDEQ (2004). Catastrophic Animal Mortality Management Plan – Emergency Disposal of Animal Carcasses. Nebraska Department of Environmental Quality Integrated Waste Management Program and Nebraska Department of Agriculture.

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